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(54) RELEASING LINER AND ADHESIVE SHEET

(57)Abstract:

PROBLEM TO BE SOLVED: To obtain a releasing liner usable for a silicone-free adhesive sheet in the electronic material field, and giving no danger of head crash due to silicone even when used for adhesion or sealing of a hard disc part.

SOLUTION: This liner is composed of a film or a laminate contg. a film, the film comprising at least (A) a polyethylene having a density of 0.945 g/cm³ or less, and (B) a polyethylene wax having a density of 0.935 g/cm³ or less and a wt. average mol.wt. of 1,000-12,000. The wt. ratio of (A) to (B) is, e.g. in the range of (A):(B)=100:1-100:50.

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CLAIMS

[Claim(s)]

[Claim 1] (A) The separator which consists of layered products containing the film which consists of polyethylene whose consistencies are three or less 0.945 g/cm, and polyethylene wax whose (B) consistencies are three or less 0.935 g/cm and, whose weight average molecular weight is 1000-12000 at least, or said film.

[Claim 2] The separator according to claim 1 whose weight ratio of (A) and (B) is (A):(B) =100:1-100:50.

[Claim 3] The pressure sensitive adhesive sheet with which the stratum disjunctum which consists of polyethylene whose (A) consistencies are three or less 0.945 g/cm, and polyethylene wax whose (B) consistencies are three or less 0.935 g/cm and, whose weight average molecular weight is 1000-12000 at least is prepared on the binder layer.

[Claim 4] The pressure sensitive adhesive sheet according to claim 3 used as an object for the hard disk drive units of a computer.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the separator used for adhesive tape, a pressure sensitive adhesive sheet, etc. of the silicone free-lancer mainly used in the electronic ingredient field, and the pressure sensitive adhesive sheets using it.

[0002]

[Description of the Prior Art] Although the thing of various types is used for the adhesive tape of an electronic related ingredient, it is almost the case which used the silicone system remover as stratum disjunctum to an adhesive layer. For example, in the pressure sensitive adhesive double coated tape, many things in adhesion of various electronic parts or the seal section which prepared the adhesive layer which consists of an acrylic binder on this liner are used using the separator which applied the silicone system remover.

[0003] However, when this kind of adhesive tape is used for the application for ***** of the bolthole of a hard disk drive (HDD) about the hard disk part of a computer, for example, an object, and the seals of an HDD equipment housing, there is a problem that a head crash occurs in the above-mentioned disk. The siloxane of ultralow volume which adhered to the binder layer front face from the separator of adhesive tape carries out the oxidation polymerization of this on a disk front face, and it is considered for forming a vitrified oxide layer. For this reason, although examination which reduces the amount of shift of the silicone to the binder stratification plane from a separator has been performed, solution sufficient in the present condition is not found out.

[0004]

[Problem(s) to be Solved by the Invention] Therefore, even if the

purpose of this invention conquers the above-mentioned problem, and can use it as a silicone free-lancer's pressure sensitive adhesive sheet in the electronic ingredient field and it uses it for adhesion and the seal of the hard disk section, it is to offer a separator useful as stratum disjunctum of a pressure sensitive adhesive sheet without a possibility that the head crash which considered silicone as the cause may occur, and this pressure sensitive adhesive sheet.

[0005]

[Means for Solving the Problem] By replacing with the separator which applied the conventional silicone system remover, as a result of inquiring wholeheartedly, in order that this invention persons may attain the above-mentioned purpose, and using the film which consists of low density polyethylene of a specific configuration, or its layered product Can acquire sufficient exfoliation effectiveness over a binder layer, and, moreover, shift of the silicone to a binder stratification plane is not seen. It came to complete a header and this invention for generating of the head crash which considered silicone as the cause no longer being seen, even if it can use it as a silicone free-lancer's pressure sensitive adhesive sheets in electronic ingredient relation and uses for the hard disk section.

[0006] That is, this invention offers the separator which consists of layered products containing the film which consists of polyethylene whose (A) consistency is three or less [0.945g //cm], and polyethylene wax whose (B) consistencies are three or less 0.935 g/cm and, whose weight average molecular weight is 1000-12000 at least, or said film. In this separator, the weight ratio of (A) and (B) is within the limits of (A): (B) =100:1-100:50.

[0007] This invention offers the pressure sensitive adhesive sheet with which the stratum disjunctum which consists of polyethylene whose (A) consistency is three or less [0.945g //cm], and polyethylene wax whose (B) consistencies are three or less 0.935 g/cm and, whose weight average molecular weight is 1000-12000 at least is prepared on the binder layer again. Said pressure sensitive adhesive sheet can be used as a pressure sensitive adhesive sheet for the hard disk drive units of a computer.

[0008]

[Embodiment of the Invention] In [separator] this invention, the consistencies of the polyethylene (A) used for a separator are three or less (usually three or more 0.890 g/cm) 0.936 g/cm still more preferably three or less 0.940 g/cm preferably three or less [0.945g //cm].

moreover, polyethylene wax (B) -- a consistency -- three or less [0.935g //cm] -- desirable -- three (usually three or more 0.890 g/cm) or less [0.932g //cm] -- it is -- weight average molecular weight -- 1000-12000 -- desirable -- 2000-10000 -- it is 3000-10000 still more preferably. Good detachability can be discovered to a binder layer by mixing specific polyethylene wax to such specific polyethylene. If the consistency of polyethylene (A), the consistency of polyethylene wax (B), and molecular weight deviate from the above-mentioned range, the detachability over a binder layer will be spoiled remarkably, or the fault of not maintaining a film configuration will arise.

[0009] the mixed rate of said polyethylene (A) and polyethylene wax (B) -- a weight ratio -- it is -- former:latter =100:1-100:50 [for example,] -- desirable -- 100:2-100:40 -- it is 100:4-100:35 still more preferably. If the ratio of polyethylene (A) and polyethylene wax (B) separates from the above-mentioned range, membrane formation nature or the detachability over a binder layer will tend to fall.

[0010] Such low density polyethylene (A) and polyethylene wax (B) can be easily obtained by choosing the manufacture condition suitably in the approach of common use well-known thru/or by choosing the purification after manufacture, judgment conditions, etc. suitably again. These may use a commercial item as it is, respectively.

[0011] It is the range where a separator spoils neither detachability nor membrane formation nature in this invention such polyethylene (A) and polyethylene wax (B), and if needed. The mixture containing other little components (for example, a resinous principle and an additive) The proper fabricating method, It membrane-formation-izes by an extrusion method etc. for example, consider as a film (a "polyethylene system film" may be called hereafter), or The obtained polyethylene system film to other one side or both sides of a base material film It can manufacture by carrying out a laminating with proper laminated layers methods (for example, an extrusion lamination, dry lamination, and wet lamination nation, a hot melt lamination, etc.), and considering as the layered product of a polyethylene system film.

[0012] Although the thickness of said polyethylene system film can be suitably chosen according to an application etc., generally it is about 5-300 micrometers. Moreover, said whole layered product thickness can also be chosen according to an application etc., for example, it is about 5-300 micrometers.

[0013] As the above-mentioned base material film, papers, such as metallic foil; Japanese paper, such as plastic film; aluminum foil, such as

polyester, polypropylene, polystyrene, and a polyvinyl chloride, and a stainless steel foil, kraft paper, paper of fine quality, and crepe paper, etc. are used.

[0014] Since the separator of this invention shows sufficient detachability to a binder layer and moreover does not contain a silicone compound, after exfoliating, a silicone compound adheres to a binder layer and it is not said that it remains in it. For this reason, it can be suitably used as stratum disjunctum of a silicone free-lancer's pressure sensitive adhesive sheet in the electronic ingredient field.

[0015] The pressure sensitive adhesive sheet of [pressure sensitive adhesive sheet] this invention is explained making a drawing reference. In addition, in each drawing, the same number is given to the same member or the same part.

[0016] Drawing 1 is the outline sectional view showing an example of the pressure sensitive adhesive sheet of this invention. In this example, the binder layer 2 is formed in one side of a base material 1, and stratum disjunctum 3 is further formed on it.

[0017] As a base material 1, papers, such as metallic foil; kraft paper, such as plastic film; aluminum foil, such as polyester, polypropylene, polystyrene, and a polyvinyl chloride, and a stainless steel foil, paper of fine quality, and crepe paper, etc. are used. Although the thickness of a base material 1 can be suitably chosen in consideration of handling nature etc., generally it is about 30-200 micrometers preferably about 5-300 micrometers.

[0018] As a binder layer 2, various kinds of binders, such as a rubber system and acrylic, are used. Also in these, the point of the detachability of stratum disjunctum 3 to an acrylic binder is more desirable. An acrylic binder uses as base resin the acrylic polymer obtained by polymerization methods of common use, such as a solution polymerization method and an emulsion polymerization method, and can prepare it as occasion demands by adding various kinds of additives, such as a cross linking agent, a tackifier, a softener, an antioxidant, and a bulking agent, to this.

[0019] As the above-mentioned acrylic polymer, for example Butyl (meta) acrylate, Alkyl (meta) acrylate, such as 2-ethylhexyl (meta) acrylate, is used as a principal component. As a monomer for reforming which can be copolymerized as occasion demands in this, hydroxyl content monomers, such as 2-hydroxyethyl (meta) acrylate, (Meta) The copolymer of the monomer mixture which added other monomers, such as vinyl ester, such as styrene system monomers, such as carboxyl group content monomers, such as an acrylic acid, and styrene, and vinyl

acetate, is used. According to these acrylic polymers, a good result is obtained much more by the detachability of stratum disjunctum 3.

[0020] The thickness of the binder layer 2 can be suitably chosen in consideration of adhesiveness etc., for example, is about 30-50 micrometers preferably 1-70 micrometers. The binder layer 2 can be formed by using the method of applying common use for the front face of a base material 1, and applying said binder to it.

[0021] As stratum disjunctum 3, the separator (layered product of a polyethylene system film or a polyethylene system film) of said this invention can be used, and it can form by sticking this separator for example, on the binder layer 2.

[0022] Drawing 2 is the outline sectional view showing other examples of the pressure sensitive adhesive sheet of this invention. The layered product of the above-mentioned polyethylene system film operated as stratum disjunctum or a polyethylene system film is used for this example as a separator for double-sided pressure sensitive adhesive sheets. That is, in this pressure sensitive adhesive sheet, the binder layers 2 and 2 are formed in both sides of a base material 1, and stratum disjunctum 3 and 3 is further formed in the front face of these binder layers 2 and 2. This pressure sensitive adhesive sheet is producible by the same approach as the pressure sensitive adhesive sheet of said drawing 1.

[0023] Drawing 3 is the outline sectional view showing the example of further others of the pressure sensitive adhesive sheet of this invention. In this pressure sensitive adhesive sheet, stratum disjunctum 3 is formed in one side of a base material 1, and the binder layer 2 is formed in other fields. This pressure sensitive adhesive sheet has the description of excelling in the detachability on the tooth back of self-.

[0024] This pressure sensitive adhesive sheet For example, the laminated layers method of common use of said separator (layered product of a polyethylene system film or a polyethylene system film) on the front face of a base material 1 for example, an extrusion lamination, dry lamination, and wet lamination nation -- While carrying out melting extrusion of the resin constituent which carries out a laminating by a hot melt lamination etc., or contains said polyethylene (A) and polyethylene wax (B) and forming stratum disjunctum 3 It can manufacture by applying to other fields of a base material 1 by the approach of common use of said binder, and forming the binder layer 2 in them.

[0025] In addition, the pressure sensitive adhesive sheet of various modes with which the stratum disjunctum which contains said

polyethylene (A) and polyethylene wax (B) not only in the above-mentioned example but in a binder layer at least is prepared is contained in the pressure sensitive adhesive sheet of this invention. For example, the pressure sensitive adhesive sheet may have layers other than the above. Moreover, a pressure sensitive adhesive sheet may be the adhesive tape which was cut out by proper width of face and wound around it.

[0026] Since the pressure sensitive adhesive sheet of this invention does not contain a silicone compound while stratum disjunctum shows sufficient detachability to a binder layer, after exfoliating, a silicone compound does not remain in a binder layer. Therefore, it is suitable as the electronic ingredient field, especially a silicone free pressure sensitive adhesive sheet for the hard disk drive units of a computer.

[0027]

[Example] Hereafter, the example of this invention is indicated and it explains more concretely. However, this invention is not limited at all by these examples. In addition, that it is in below with the section means the weight section.

[0028] Ethyl acetate is used as a solvent for the monomer mixture of the example 12-ethylhexyl acrylate 90 section and the acrylic-acid 10 section, solution polymerization was carried out with the conventional method by having made benzoyl peroxide into the polymerization initiator, and weight average molecular weight obtained the solution (40 % of the weight of solid content) of the acrylic polymer of 900,000. Per acrylic polymer 100 section and the 0.1 sections of epoxy cross-linking agents were blended with this, and the acrylic binder was prepared. This acrylic binder was applied to one side of the base material with which thickness consists of polyester film which is 50 micrometers so that the thickness after desiccation might be set to 30 micrometers, and it dried at 100 degrees C for 3 minutes, and the binder layer was formed. On the other hand, mixture with 3 and the polyethylene wax 20 section of weight average molecular weight 4300 was pelletized by melting extrusion and the pelletizer with the polyethylene 100 section of 3 using the 75phi 1 shaft kneading extruder the consistency consistency of 0.92g/cm of 0.924g/cm. The film (separator) with a thickness of 100 micrometers was obtained for the obtained pellet melting extrusion and by membrane-formation-izing using the 40phi 1 shaft kneading extruder. This separator was stuck on the front face of the above-mentioned binder layer, and adhesive tape was produced.

[0029] As a raw material of example 2 separator, except having used the

mixture of the polyethylene 100 section of 3, and the consistency 0.92 g/cm³ and the polyethylene wax 30 section of molecular weight 7200 the consistency of 0.935g/cm, the same actuation as an example 1 was performed, and adhesive tape was produced.

[0030] As a raw material of example 3 separator, except having used the mixture of the polyethylene 100 section of 3, and the consistency 0.93 g/cm³ and the polyethylene wax 5 section of molecular weight 4000 the consistency of 0.905g/cm, the same actuation as an example 1 was performed, and adhesive tape was produced.

[0031] As a raw material of example of comparison 1 separator, except having used the mixture of the polyethylene 100 section of 3, and the consistency 0.92 g/cm³ and the polyethylene wax 10 section of molecular weight 4300 the consistency of 0.958g/cm, the same actuation as an example 1 was performed, and adhesive tape was produced.

[0032] As a raw material of example of comparison 2 separator, except having used only the polyethylene 100 section of 3 the consistency of 0.915g/cm, the same actuation as an example 1 was performed, and adhesive tape was produced.

[0033] As a raw material of example of comparison 3 separator, except having used the mixture of the polyethylene 100 section of 3, and the consistency 0.98 g/cm³ and the polyethylene wax 10 section of molecular weight 4000 the consistency of 0.924g/cm, the same actuation as an example 1 was performed, and adhesive tape was produced.

[0034] The following detachability trial was performed about the adhesive tape obtained in the detachability test above-mentioned example and the example of a comparison. That is, two samples which cut adhesive tape to 20mm width of face were prepared. One of them was saved at the room temperature (23 degrees C), and the one remaining was saved for three days at 50 degrees C. The resistance (exfoliation force) when an omnipotent tension tester (RTM-100, cage en tech company make) tearing off the base material side which consists of polyester film in the ambient atmosphere of 23 degrees C and 60%RH to the plate which has rigidity about these two samples, and tearing off a lamination and separator side by part for speed-of-testing/of 300mm in the direction of 180 degree was investigated. A result is shown in Table 1.

[0035]

[Table 1]

表 1

	剝離力 (gf / 20mm幅)	
	室温 (23℃) 保存	50℃×3日保存
実施例1	37	38
実施例2	31	28
実施例3	16	15
比較例1	132	176
比較例2	89	142
比較例3	113	160

it turn out that the adhesive tape of the examples 1 - 3 applicable to the pressure sensitive adhesive sheet of this invention use advantageously as a silicone free-lancer adhesive tape in the electronic ingredient field since an exfoliation force show the detachability which be as low as below 40gf(s) / 20 mm width of face in any of a room temperature preservation article and the preservation article in the conditions on 50 degree C x the 3rd, and be excellent and moreover do not use the silicone compound so that clearly from the result of Table 1. On the other hand, in the adhesive tape of the examples 1-3 of a comparison which do not correspond to this invention, the above-mentioned exfoliation force is quite large, and has the problem in detachability.

[0036]

[Effect of the Invention] As mentioned above, the separator of this invention consists of a film which consists of low density polyethylene of a specific configuration, and polyethylene wax of a specific configuration at least, or its layered product. Moreover, since the stratum disjunctum which consists of said specific polyethylene and polyethylene wax at least is prepared, the pressure sensitive adhesive sheet of this invention Since sufficient exfoliation effectiveness is acquired to a binder layer and shift of the silicone to a binder stratification plane moreover is not seen, it can be used as a silicone free-lancer's pressure sensitive adhesive sheets in electronic ingredient relation. The effectiveness according to rank that generating of the head crash which considered silicone as the cause is no longer seen even if it uses for the hard disk drive units of a computer especially is done so.

[Translation done.]